Translation

PCT Application
PCT/JP2003/000311

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 3015WO0P	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/JP03/00311	International filing date (*day/month/year*) 16 January 2003 (16.01.03)	Priority date (*day/month/year*) 18 January 2002 (18.01.02)
International Patent Classification (IPC) or national classification and IPC C07K 14/47, 16/18, C12N 15/12, 15/63, 5/10, A61K 38/00, 39/00, 48/00, G01N 33/53, C12P 21/02, 21/08		
Applicant TAKEDA CHEMICAL INDUSTRIES, LTD.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☒ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☒ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand 13 February 2003 (13.02.03)	Date of completion of this report 22 September 2003 (22.09.2003)
Name and mailing address of the IPEA/JP Facsimile No.	Authorized officer Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/JP03/00311

I. Basis of the report

1. With regard to the elements of the international application:*

☒ the international application as originally filed

☐ the description:

pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the claims:

pages _____, as originally filed
pages _____, as amended (together with any statement under Article 19
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the drawings:

pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the sequence listing part of the description:

pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

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III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application.

☒ claims Nos. 21-22, 25-29, 48-49, 52-56, 75-76, 79-83, 102-103, 106-107, 111-115

because:

☒ the said international application, or the said claims Nos. 28, 55, 82, 114
relate to the following subject matter which does not require an international preliminary examination *(specify)*:

The subject matter of claims 28, 55, 82 and 114 relates to a method for treatment of the human body by therapy, which does not require an international preliminary examination by the International Preliminary Examining Authority in accordance with PCT Article 34(4)(a)(i) and Rule 67.1(iv).

21-22, 25-27, 29, 48-49, 52-54, 56,
75-76, 79-81, 83, 102-103, 106-107,

☐ the description, claims or drawings *(indicate particular elements below)* or said claims Nos. 111-113, 115
are so unclear that no meaningful opinion could be formed *(specify)*:

See Supplemental Box

☐ the claims, or said claims Nos. _____ are so inadequately supported
by the description that no meaningful opinion could be formed.

☒ no international search report has been established for said claims Nos. 21-22, 25-29, 48-49, 52-56, 75-76, 79-83, 102-103, 106-107, 111-115

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the standard.

☐ the computer readable form has not been furnished or does not comply with the standard.

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IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

☐ restricted the claims.

☐ paid additional fees.

☐ paid additional fees under protest.

☐ neither restricted nor paid additional fees.

2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

☐ complied with.

☒ not complied with for the following reasons:

Claims 1-29 concern a novel sodium-dependent bile acid transporter protein, claims 30-56 concern a novel Na^+/H^+ exchange transporter protein, claims 57-83 concern a novel P-type ATPase protein, and claims 84-115 concern a novel vanilloid receptor protein. At the time this application was filed, various types of sodium-dependent bile acid transporter proteins, Na^+/H^+ exchange transporter proteins P-type ATPase proteins, and vanilloid receptor proteins were already publicly known, and because these groups of claims do not share a common special technical feature, this examination finds that they do not constitute a group of inventions so linked as to form a single general inventive concept.

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

☒ all parts.

☐ the parts relating to claims Nos. _____ .

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-20, 23-24, 30-47, 50-51, 57-74, 77-78	YES
	Claims	84-101, 104-105, 108-110	NO
Inventive step (IS)	Claims	1-20, 23-24, 30-47, 50-51	YES
	Claims	57-74, 77-78, 84-101, 104-105, 108-110	NO
Industrial applicability (IA)	Claims	1-20, 23-24, 30-47, 50-51, 57-74, 77-78, 84-101, 104-105, 108-110	YES
	Claims		NO

2. Citations and explanations

Document 1: Nature, February 8, 2001, Vol. 409, No. 6821, p. 685-690
Document 2: WO 02/04520 A2 (INCYTE GENOMICS, INC.) January 17, 2002
Document 3: Physiol Genomics, November 11, 1999, Vol. 1, No. 3, p. 139-50
Document 4: WO 02/00722 A2 (Millennium Pharmaceuticals, Inc.) January 3, 2002

Based on the description in document 3 cited in the international search report, the inventions of claims 57-74 and 77-78 lack an inventive step. Document 3 describes a type 3 P-type ATPase having approximately 94% homology with the amino acid sequence identified as Seq. ID No. 42. At the time of filing of this application it was widely-known technology to make deletions, substitutions, or additions to polypeptides with activity to obtain the desired level of activity. In addition, at the time of filing of this application it was widely-known technology to prepare a DNA probe based on the amino acid sequence of a publicly known protein, screen a cDNA library of cells that produce that protein to obtain cDNA corresponding to that protein, transform host cells by incorporating that cDNA into a vector and culture them to obtain that protein, and perform screening using those polypeptides and antibodies thereof. This examination dings that persons skilled in the art could easily conceive of creating these inventions by applying these widely-known techniques to the invention described in document 3. Furthermore, this examination finds that persons skilled in the art can easily conceive of using these polypeptides as medicines.

Based on the description in document 4 cited in the international search report, the inventions of claims 84-101, 104, 105, and 108-110 lack novelty and an inventive step. Document 4 describes a calcium channel having approximately 93% homology with the amino acid sequence identified as Seq. ID No. 66.

VI. Certain documents cited

1. Certain published documents (Rule 70.10)

Application No. Patent No.	Publication date *(day/month/year)*	Filing date *(day/month/year)*	Priority date (valid claim) *(day/month/year)*
WO 02/33087 A2	25.04.2002	17.10.2001	17.10.2000
WO 02/072774 A2	19.09.2002	06.03.2002	12.03.2001
WO 02/077237 A2	03.10.2002	08.02.2002	09.02.2001
[EX] (regarding 1-29)			
WO 02/10216 A2	07.02.2002	30.07.2001	28.07.2000
[EX] (regarding 30-56)			
EP 1225182 A2	24.07.2002	16.01.2002	17.01.2001
WO 02/101045 A2	19.12.2002	13.06.2002	13.06.2001
[EX] (regarding 57-83)			
WO 02/12340 A2	14.02.2002	01.08.2001	03.08.2000
WO 02/44210 A2	06.06.2002	30.11.2001	01.12.2000
GB 2372993 A	11.09.2002	02.11.2001	03.11.2000
[EX] (regarding 84-115)			

2. Non-written disclosures (Rule 70.9)

Kind of non-written disclosure	Date of non-written disclosure *(day/month/year)*	Date of written disclosure referring to non-written disclosure *(day/month/year)*

Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of Box III, V:

Box III.

The compounds described in the claims of group (1) (21, 25, 29, 48, 52, 56, 75, 79, 83, 102, 106, 111, and 115) and the medicinal compositions described in the claims of group (2) (22, 26-27, 49, 53-54, 76, 80-81, 83, 103, 107 and 112-113) are identified by the "screening method of claims (18, 23, 46, 50, 73, 77, 100, 104, and 109)", and they include all compounds and medicinal compositions obtained by those screening methods.

However, the specification provides no specific description whatsoever of compounds and medicinal compositions obtained by those screening methods, and therefore the descriptions of the claims in groups (1) and (2) lack complete disclosure in the sense of PCT Article 5 and are not supported by the description in the Specification in the sense of PCT Article 6. In addition, in light of the level of technology at the time of filing, it is entirely unclear which compounds are specifically included and which are specifically excluded. Therefore, the descriptions in the above claims are exceedingly vague and do not satisfy the requirement for clarity in the PCT Article 6.

As a result, an opinion cannot be rendered on the inventions described in the above claims.

Box V.

The inventions of claims 1-20 and 23-24 are novel and involve an inventive step with respect to document 1 cited in the international search report. Document 1 does not describe a protein having activity involved in the transport of steroid hormones, bile acid and the like that contains the amino acid sequences identified as Seq. ID Nos. 1, 14 and 104.

The inventions of claims 30-47 and 50-51 are novel and involve an inventive step with respect to document 2 cited in the international search report. Document 2 describes an ion channel protein having approximately 85% homology with the amino acid sequence identified as Seq. ID No. 18, but it does not state that this protein has cation and H^+ exchange transport activity.